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AUSTRIAN FIELD CRESS: A NEW WEED IN THE UNITED STATES.

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During June 1921, the attention of the writer was attracted to a weed that is over-running certain sections of Borderland Farm, New Milford, Orange County, New York. The plant grew in dense masses to the exclusion of practically all other vegetation.

At that time, the plant was in full bloom, and the tiny flowers gave the entire infested area a yellow cast. One field, which was used as a pasture, contained about five acres of infestation; patches of the weed occured at a distance of from two to three hundred yards from the main area of infestation, while the roadsides on the farm were thoroughly infested.

Since the plant was new to the writer, specimens were secured and identified. Indentification being impossible with American manuals, European works were consulted and the plant was identified as *Roripa austriaca*, Spach. (*Nasturtium austriacum* Crantz).

The identification was verified by the office of Economic and Systematic Botany of the United States Department of Agriculture. The common name of the plant is field cress or Austrian field cress. A picture of the field cress is contained in Reichenbach's "Icones Flora Germanica," figure 4295.

The following description of the species was translated from Boissier's Flora Orientales 11:180 by Mr. S. F. Blake.

"Glabrous perennial; leaves oblong-spatulate, the lower petioled, entire or toothed, the others sessile, auriculate-cordate, denticulate; pods globose, much shorter than the erect-spreading pedicel; the valves nerveless; seeds scabrous under a lens." No entire-leaved specimens were found among the plants growing in New York.

A number of plants were dug and a study was made of the root system. The massed, bunched, above-ground growth is explained by the thick, fleshy, creeping roots, which extend in all directions and from which shoots arise at frequent intervals. The roots grow at a depth of from an inch to a foot or more. The matted, creeping, perennial root system suggests that the field cress is a potentially dangerous plant, since many of our worst weeds are difficult to eradicate on account of similar root systems. Examples of noxious weeds of this character are the Canada thistle and wild morning glory.

According to Mr. Lloyd Taylor, proprietor of Borderland Farm, the field cress was introduced upon his farm about 1910 by means of impure grass seed. At first the plant occured merely as a small patch which did not spread to any extent for a number of years. Care was exercised to mow the plant each season before seeds were formed, but the field cress spread gradually, evidently by means of the creeping roots. During recent years it has spread at an alarming rate until at the present time there is a total area of about seven acres of infestation, which is scattered over a considerably larger area on the farm. Borderland Farm is located on the boundary line between New York and New Jersey, consequently the infested area, though small, occurs in two states. The plant appears to have little preference as to soil, seeming to thrive equally well on wet or dry loam and on sandy soil, clay and gravel.

A Suggested Solution.

The Austrian field cress seems to be a new weed problem in the United States, since no report could be found of its occurrence as a weed in America. Futhermore, at present it is extremely limited in range, being apparently restricted to approximately six or seven acres of infestation occuring upon a single farm. In view of these facts there seems to be an excellent opportunity to extirpate a potentially dangerous weed at a comparatively small cost. One method by which this can be done is to station a man upon the infested area during the growing season for two years or more. It should be his sole duty to keep the green growth from developing, thereby starving the roots. It is possible to eradicate weeds possessing deep running roots or rootstocks by keeping the green tissue

cut back for an entire season, as has been demonstrated a number of times with the Canada thistle and other similar weeds.

One method by which it is thought that the field cress can be exterminated is by persistent spraying, either with an oil spray, a concentrated salt solution or an iron sulphate spray. The spraying should be continued until the plant is completely eradicated. Members of the mustard family are particularly susceptible to the effects of an iron sulphate or a copper sulphate spray. This method is now being used successfully in Maine, New Hampshire and other states for the control of wild mustard or field kale in grain crops. The same method has also been successful in destroying a number of other weeds of the mustard family. Since the Austrian field cress is a member of the mustard family, it is thought that the spraying method offers a reasonable chance for eradication. It is important that the work should be done without loss of time, since the longer the delay, the larger will be the area to be dealt with and the expense will be correspondingly greater. Agricultural authorities of New York, New Jersey and the federal government should be interested in this problem.

Numerous examples can be cited of foreign plants that first occurred in the United States in restricted areas, from which they gradually spread to become noxious weeds causing many thousands of dollars of damage annually. The king-devil, *Hieracium florentinum*, was first noted as a weed in a hay field at Cutler, Maine, occurring as a small patch a few feet in diameter. No precautions seem to have been taken to prevent its spread until at the present time it is an extremely troublesome weed from Quebec to New York. Thousands of acres of pasture land have been made unprofitable by this noxious plant.

Many newly introduced species seem to spread slowly at first. After a period of acclimatization, they seem to suddenly develop aggressive habits and become serious weed problems. A case at point is the wild turnip or rape (a member of the mustard family) which first appeared in the United States about 1863. The species did not prove troublesome until about 1887, when it began to spread rapidly. Since then it has become a noxious grain field weed in New York and throughout New England and Quebec. It is entirely possible that the Austrian field cress is now undergoing or has completed a similar period


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of acclimatization that will be followed by a rapid spread. It seems to be the part of wisdom to attack the problem at present when it can be so readily disposed of.

Many additional and similar examples can readily be cited to prove that it is folly to allow a new plant with dangerous weed characteristics to spread without attempting eradication before it is too late. The Austrian field cress problem surely deserves the "ounce of prevention."

Radical measures are as necessary against a new weed problem of this character as are needed in dealing with insect and fungus pests. The cost of exterminating the Austrian field cress under present conditions should not be over five hundred dollars and it is believed that the investment will be a very wise one. The federal government has spent many thousands of dollars in attempts to eradicate such new agricultural pests as the corn borer and the Japanese beetle. The Austrian field cress problem now offers an opportunity to prevent possible great losses by the investment of a very modest sum. It is an opportunity that should not be neglected.

FIG. 1. AUSTRIAN FIELD CRESS.
Roripa austriaca Spach.
Sketch made from specimens collected at New Milford, NewYork.

Contribution from the Botanical Department of the Purdue University Agricultural Experiment Station.

SOME OVERLOOKED SCROPHULARIACEAE OF RAFINESQUE

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In preparing my reviews of the family Scrophulariaceae in the "Local Flora"* and in the Southeastern United States† the endeavor was made to include all species of this family ever described from these two areas. Once for all I wished to produce this history, so that the application of each name might be duly explained and the goodly proportion of excess names be honor-

* Torreya **19**: 107–119; 143–152; 161–171; 205–216; 235–242. 1919.
† Proc. Acad. Nat. Sci. Philadelphia **71**: 224–291. 1920.